

- 2 -

## RESPONSE

This Response is directed to the Final Rejection in USSN 09/869,990 dated 09/15/2006. This rejection differs from the prior Rejection dated 04/06/2006 in that it reflects the cancellation of claim 7 in Applicant's response to the Rejection dated 04/06/2006. This Response is directed to the Examiner's Response to Arguments set forth in the Final Rejection.

In paragraph 21, the Examiner responds to Applicants arguments as follows: "Applicant first argues that McCandlish does not disclose a catalyst comprising  $\text{Ni}(\text{Mo}_y\text{W}_{1-y}\text{O}_4)$ . However, McCandlish discloses the catalyst  $\text{ML}(\text{Mo}_y\text{W}_{1-y}\text{O}_4)$ , where M can be Ni and L is a ligand. Therefore the catalyst of McCandlish comprises  $\text{Ni}(\text{Mo}_y\text{W}_{1-y}\text{O}_4)$ . Also, the omission of an element and its function is obvious if the function of the element is not desired (MPEP 2144.04 II.A., citing Ex parte Wu, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989)). In this case, the Applicant states that the catalyst of the invention does not contain a ligand unlike the catalyst of McCandlish where the catalyst precursor contains a ligand and such a catalyst precursor is not desired in Applicant's invention because it is water-soluble and the catalyst of Applicant's invention is totally insoluble in water. Therefore, it would be obvious to element (sic?) the catalyst precursor containing the ligand because the Applicant does not want the catalyst to be water-soluble."

Applicant takes exception to the Examiner's position for the following reasons.

1. The Examiner assumes that the omission of ligand L in the formula  $\text{ML}(\text{Mo}_y\text{W}_{1-y}\text{O}_4)$  of McCandlish will result in applicant's catalyst where M is selected as Ni. This is not correct. McCandlish discloses only the formula for the catalyst precursor. McCandlish does not disclose the formula for the catalyst itself. In fact, the ligand L is crucial to the catalyst of McCandlish and this is clearly shown in the

- 3 -

Examples. Example 1 is a comparison of two catalysts of the invention to a commercially available cobalt molybdate. The catalyst precursors in Example 1 (Table 2) are  $\text{Ni(en)}_3\text{MoO}_4$  and  $\text{Co(en)}_3\text{MoO}_4$  supported on gamma alumina are compared to commercially available cobalt molybdate on gamma alumina. Both catalyst precursors resulted in catalysts having superior HDN as compared to the commercial catalyst. This is strong evidence that the ligand is critical to McCandlish. Simply eliminating L from the precursor would give the formulaic equivalent of the commercial catalyst and should yield the same result. This is the opposite of what is shown in Table 2.

2. The Examiner's reliance on MPEP 2144.04 II is also not appropriate to the present facts. In the cited section from the MPEP, which in turn cites Ex parte Wu, the claims at issue were directed to a method for inhibiting corrosion on a metal surface using a composition consisting of epoxy resin, petroleum sulfonate and hydrocarbon diluent. The Board affirmed the rejection holding that it would have been obvious to omit the polybasic salts of the primary reference where the function attributed to such salt is not desired or required, such as in compositions for providing corrosion resistance in environments which do not encounter fresh water. The facts in this section of the MPEP addresses the factual situation where a composition is a mixture of A, B and C. This is quite unlike the present facts which relate to a compound ABC. One cannot remove an element of a compound and have any predictability over the properties of the remaining elements. In fact, the improvement of McCandlish is the addition of the ligand L. Removing L from McCandlish results in the formula of prior art catalysts. Why would one skilled in the art go through the trouble of making the catalyst precursor of McCandlish if they could have gotten the same results without the ligand? This is like saying that the metallocene component from a zirconium metallocene catalyst could be eliminated without influencing its catalytic properties. If this were true, then one could have substituted zirconium oxide and gotten the same result. This is not the case.

- 4 -

3. Further to 2) above, the Examiner states that Applicant's position "that the catalyst of the invention does not contain a ligand unlike the catalyst of McCandlish where the catalyst precursor contains a ligand and such a catalyst precursor is not desired in Applicant's invention because it is water-soluble and the catalyst of Applicant's invention is totally insoluble in water. Therefore, it would be obvious to eliminate the catalyst precursor containing the ligand because the Applicant does not want the catalyst to be water-soluble." In response, water insolubility is a physical property of the resulting bulk metal catalyst. It is not correct to imply that the solubility or lack thereof was a goal for making Applicant's catalyst. It is further noted that the McCandlish catalyst precursor is actually an ionic complex consisting of a cationic metal cation  $[ML]^{2+}$  which is ionically bound to the metal oxide anion  $(Mo_yW_{1-y}O_4)^{2-}$ . This why the ligand is neutral and does not have a charge. (See col. 4, lines 5-13 of McCandlish). It is the ionic nature of the precursor that leads to solubility. The ligand itself is neutral, and its removal should not result in a change in charge. In contrast, Applicants catalyst is not ionically bound.

4. Finally, in paragraph 22 of the Examiner's response, the Examiner states that "McCandlish is cited for teaching that the catalyst of Applicant and the catalyst of McCandlish overlap when  $y=0.5$  (see paragraph 7)." In response, Applicant notes that McCandlish does not give a formula for the actual catalyst, only the catalyst precursor. Therefore, there is no basis for concluding that the catalyst of Applicant and the catalyst of McCandlish overlap when  $y=0.5$ . Moreover, all the catalyst precursors set forth in the examples are to  $NiLMoO_4$  or  $CoLMoO_4$ , i.e., when  $y=1$ . There is no teaching as to how one could make a catalyst precursor containing Ni, Mo and W, i.e., when  $y$  does not equal 1, much less how to make a catalyst containing Ni, Mo and W.

- 5 -

For the reasons noted above, it is urged that Applicants have made a patentable advance in the art and that the final rejection be withdrawn. Favorable action is solicited.

Respectfully submitted,



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☒ Pursuant to 37 CFR 1.34(a)

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